

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Grimbergen et al.	Group Art Unit: 1792
Serial No: 09/595,778	Examiner: Allan W. Olsen
Confirmation No: 6490	
Filing Date: June 16, 2000	Attorney Docket No: 002077 USA D01/ETCH/SILICON/MDD
For: APPARATUS AND METHOD FOR MONITORING PROCESSING OF A SUBSTRATE	July 16, 2008 San Francisco, California

DECLARATION PURSUANT TO 37 C.F.R. § 1.131

Box Fee Amendment
Commissioner for Patents
Washington, D.C. 20231

Examiner Olsen:

- I. This declaration is to establish conception of the invention of this application in the United States, at a date prior to December 17, 1996, which is the effective date of U.S. Patent No. 5,985,092 to Chiu et al., and further to establish diligent work on the invention from a date prior to December 17, 1996 and up until the invention was reduced to practice.
- II. The persons making this declaration are the inventors of the present application.
- III. Attached to this Declaration is: Exhibit A, titled "Sensor Program Update", part of a presentation by the inventors which describes aspects of the present invention. Dates have been removed from the document. The presentation was drafted prior to December 17, 1996.

IV. From EXHIBIT A it can be seen that the inventors had conceived of a method of processing a substrate in a process chamber comprising a wall, the method comprising: providing a substrate in the process chamber, the substrate having a surface; introducing a gas into the process chamber; energizing the gas by passing RF energy through the wall of the process chamber to the gas inside the process chamber to energize the gas; detecting radiation reflected from the substrate from directly above the surface of the substrate after the radiation propagates through the wall; and evaluating the detected radiation to monitor the depth of a layer being processed on the substrate, as claimed in claim 1.

V. From Exhibit A it can be further seen that the inventors had conceived of a method of processing a substrate in a process chamber comprising a wall and having a non-vertical multi-turn antenna above the wall, the method comprising: placing in the process chamber, a substrate having a layer; introducing a gas into the process chamber; powering the non-vertical multi-turn antenna to couple energy through the wall to the gas inside the process chamber to energize the gas to process the layer on the substrate; detecting radiation reflected from the substrate and propagating through the wall; and evaluating the detected radiation to monitor the depth of the layer being processed on the substrate, as claimed in claim 105.

VI. Exhibit A also demonstrates that the inventors had conceived of a method of processing a substrate in a process chamber comprising a ceiling and an antenna above the ceiling, the method comprising: providing a substrate in the process chamber, the substrate having a surface; introducing a gas into the process chamber; energizing the gas by applying an RF current to the antenna to pass RF energy through the ceiling of the process chamber to the gas inside the process chamber to energize the gas; detecting radiation reflected from the substrate from directly above the surface of the substrate after the radiation propagates through the ceiling; and evaluating the detected radiation to monitor processing of the substrate, as claimed in claim 106.

VII. Exhibit B is a receipt for a UV photo-sensor used to make a prototype apparatus capable of performing the invention of claims 1, 105 and 106. Date information has been redacted from the receipt. However, the receipt date is prior to December 17, 1996.

IIX. Exhibit C is a receipt for a UV lamp used to make a prototype apparatus capable of performing the invention of claims 1, 105 and 106. Date information has been redacted from the receipt. However, the receipt date is prior to December 17, 1996.

IX. Exhibit D is a receipt for a UV lamp used to make another prototype apparatus capable of performing the invention of claims 1, 105 and 106. Date information has been redacted from the receipt. However, the receipt date is prior to December 17, 1996.

X. Exhibit E is a receipt for a set of UV mirrors to fold the optical beam of a prototype apparatus capable of performing the invention of claims 1, 105 and 106. Date information has been redacted from the receipt. However, the receipt date is prior to December 17, 1996.

XI. From Exhibits B, C, D and E it can be seen that diligent work to reduce the invention of claims 1, 105 and 106 to practice began at a date prior to December 17, 1996.

XII. Exhibit F is an excerpt of a presentation titled "DPS Recess Endpoint Status", dated January 22, 1997. Inventors had completed a UV source assembly prototype, and dome with fused window had been successfully mounted on a chamber system.

XIII. From Exhibit F it can be seen that the invention was diligently worked on in the month of January, 1997.

XIV. The activity evidenced by exhibits B, C, D, E and F was performed in the order listed. At no time was the gap between evidenced adjacent steps greater than a span of two months.

XV. Exhibit G is a photograph showing a working chamber capable of performing the processes of claims 1, 105 and 106. The photograph of Exhibit G was taken with a digital camera and has a file creation date of February 20, 1997.

XVI. Exhibit G shows that the invention was reduced to practice at least as early as February 20, 1997.

XVII. As the person signing below, I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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